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SHI ET AL
Serial No. **09/891,886**
Filed: **06/26/2001**

REMARKS

Prior to the foregoing amendments to the claims, Claims 1-6 and 8-19 were pending. With the cancellation of Claims 11 and 19, the currently pending claims are Claims 1-6, 8-10 and 12-18.

Claims 1, 6, 8, 10 and 16 have been amended to more clearly define the invention and to recite novel features thereof to distinguish over the prior art. Favourable reconsideration of this application in light of such amendments and the following remarks is respectfully requested.

The rejection of Claims 1, 3-5, 8-10, 12-16 and 18, under U.S.C. 103(a) as being unpatentable over Emsley et al. (US Pat. Application Publication No. 2002/0019983), as set forth on pages 3-6 of the outstanding Office Action, is respectfully traversed.

The rejection initially alleges that Claims 1, 10 and 16 are obvious in light of Emsley et al. However, in contrast to the conclusion reached in the Office Action, Applicants respectfully submit that there are several substantial aspects of Claims 1, 10 and 16, which are not thought, suggested, nor may they be inferred from the disclosure of Emsley et al.

First of all, the statement of the rejection characterizes the reference to Emsley et al as disclosing a (namely, only one) band pass filter for conditioning the input signal that is *either* in accordance with a 6 MHz standard *or* a 8 MHz standard (but not both concurrently). Namely, Emsley et al describe that the BPF 86 is *either* for the European signal *or* the U.S. signal (Emsley et al,

paragraphs [0024], [0025], [0130]). As a consequence, it is respectfully submitted, Emsley et al do not disclose a plurality of signal conditioning circuits, each corresponding to a digital standard so that one circuit may be selected to condition the digital signal.

More particularly, the testing instrument disclosed by Emsley et al is configured to measure two entirely different classes of signal: one broadband, one narrowband.

The first of these classes is consistent with a bandwidth suitable for digital television signals, viz. 6MHz centered on 43.75MHz or 8MHz centered on 36.125MHz.

The second of these classes is consistent with a bandwidth of 17kHz (150kHz initially) centered on 10.7MHz, suitable for pilot tones, audio signals, text messages or similar, but not television signals.

The testing instrument of Emsley et al. provides separate signal paths, selectable by an electronic switch through its circuitry, for each class of signal. Thus, the broadband signal with a bandwidth of either 6MHz or 8MHz passes through one type of bandpass filter (86, Emsley et al paras. [0024], [0025] and [0130]; Figures 2 and 38). On the other hand, the narrowband signal with a bandwidth of nominally 17kHz passes through an entirely different type and number of bandpass filters (88 in Emsley et al paras. [0024], [0025] and [0130]; 88, 96, 102 and 106 in Fig. 2; 88 in Fig. 38; 96 in Fig. 39; 102 in Fig. 41; and 106 in Fig. 42). Clearly, the electronic switches involved (for instance 84, 90, 94, 100, 110 in Emsley et al Fig. 2) are intended for performing tests

on the same type of broadband signal and associated narrowband signal.

The different treatment of each class of signal would lead a person skilled in the art to conclude that the electronic selection of bandpass filters provided for in the instrument of Emsley et al is motivated by the intent to measure different aspects or sub-signals on the same information channel. This is underlined by the fact that in at least four separate instances, as well as the detailed circuit description, Emsley et al. explicitly state that one type of television signal is chosen from ***either*** the European-type ***or*** the U.S.-type (for instance Emsley et al, paragraphs [0024], [0025], [0031], [0130]).

This conclusion is further supported by the observation that the switches of Emsley et al are electronic, and thus capable of being operated automatically under the control of the microprocessor (PC 22 in Emsley et al Fig. 1). As Emsley et al do not describe that user input is required for selecting one of the two different intermediate frequencies 43.75MHz (or 36.125MHz) and 10.7MHz, it would be reasonable to assume that such selection would be carried out automatically during testing.

It may also be noted that the type of electronic component referred to illustratively by Emsley et al. in conjunction with the switch used to select the bandpass filter (type Alpha AS139-73, denoted in Emsley et al by 84, 90 and 110 in Fig. 2) is a single pole, double throw switch. Because of this limitation, it is not suitable for selecting one of three IF signals, two broadband and one narrowband, which would be necessary, if Emsley et al's system

were directly modifiable as suggested in the Office Action.

Actually, the function of the user interface described by Emsley et al. (for instance paragraphs [0002] - [0004], [0020], [0051], [0055] - [0057]) is to transmit various user input over the network, like instrumentation bar codes, signatures on service contracts, work orders, system records. No mention is made of using the user interface to select the signal conditioning circuitry, digital standard or digital demodulation decoding scheme.

In the absence of any provision for a user to select a digital standard or a modulation scheme, it would be reasonable to assume that no such user option to select exists in the testing instrument of Emsley et al. Their disclosed instrument is constructed in a manner which is configured for a particular network or geographic region. While the configuration could conceivably be preset according to the network where it is to be applied, no user input for selecting or changing this configuration is taught, suggested or implied.

Thus, it is respectfully submitted that Claims 1, 10 and 16 are not obvious in view of Emsley et al.

To more clearly distinguish Claim 1 from the cited prior art, Claim 1 has been amended to include the following recitation:

> "a user interface operative to allow a user to select the digital signal",

as described in the specification on page 20, lines 12-17 and on page 22, lines 7-9.

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Associated minor amendments have also been made to Claims 6 and 8, without introducing any new subject matter, to conform their wording to amended Claim 1.

Similarly, independent Claim 10 has been amended by insertion of the phrase "operable in dependence upon selection by a user", in place of "operative", to emphasize the claimed functionality of the invention.

Claim 11 has been cancelled.

Also, independent Claim 16 has been amended by the insertion of the phrase "in dependence upon a user's input from a user interface" in two places: a) between "selecting" and "via the test meter a digital standard"; and b) between "selecting" and "via the test meter a demodulation scheme".

Regarding the rejection of dependent Claims 3, 12 and 13, as pointed out above in connection with Claim 1, Emsley et al disclose only one filter, which corresponds to the European or the U.S. broadband digital standard, centered about 36.125MHz or 43.75MHz respectively. As discussed above, the second filter is a part of a completely different class of signals, which are narrowband, centered about the intermediate frequency of 10.7MHz and is processed in a different manner by Emsley's disclosed circuitry.

As Emsley et al do not teach the inclusion of two broadband bandpass filters concurrently, a plurality of broadband digital standards within the same instrument cannot be accommodated. Neither do Emsley et al disclose any means for the user to select

one of a plurality of filters, each corresponding to a particular digital standard. This is in direct contrast to what is claimed in Applicants' Claims 3, 12 and 13.

Thus, it is respectfully submitted that Claim 3 and corresponding Claims 12 and 13 are not obvious in view of Emsley et al.

Claims 4 and 5, being dependent on Claim 3, are therefore necessarily not obvious over Emsley et al. The fact that Emsley et al state that their invention is "not limited to the specifically identified components" is irrelevant, as the circuit they disclose demonstrates a substantial differentiation between the treatment of broadband and narrowband signals. Clearly, the substitution of other components with similar functions would not facilitate the use of two broadband signals concurrently in the same testing instrument, again in contrast to what is claimed in the rejected claims. Therefore, Claims 14 and Claim 5 are believed to be patentable.

The rejection of Claim 8 alleges that it is inherent in the disclosure of Emsley et al. that a "display, keypad, and signature pad (i.e. user interface)" would be used "to choose which digital modulation scheme to employ". This conjecture (that "there must be some form of interface") is apparently based on the assumption that Emsley et al disclose a system where such a choice is available. However, a conjecture is not evidence. As such, the rejection of claim 8 is unsupported by evidence.

In addition, a careful reading of Emsley et al reveals two

important shortcomings: First, their testing instrument uses only one broadband filter suitable for only one broadband digital standard. Second, their user interface is provided exclusively, so that the user can transmit information about the system or its associated consumers or equipment generated to the net. In other words, their disclosure is silent on the existence of concurrent choices and the means to choose a digital standard or a modulation scheme, let alone such choice being available to the user via a user interface.

It necessarily follows, therefore, that, in a testing instrument where no user controls are provided or intended for choosing the above parameters, to include "some form of interface" to perform such a choice would be superfluous.

The rejection also takes "Official Notice" that, at the time of Applicants' invention, methods of allowing a user to select the modulation scheme of filters were notoriously well-known in the art. The U.S. Patent No. 4,757,519 by Collison et al. (1988) has been cited to support this assertion.

The disclosure of Collison et al. relates to the provision of a user-configurable "digital premodulation filter aimed at conditioning a serial bit stream prior to frequency (or phase) modulation of a RF carrier signal." (Col. 1, lines 7-9). However, it is not clear how, if at all, the described user-configurable digital filter technology could be applied to Applicants' claimed invention.

One of the main obstacles to applying digital techniques to signal testing is the inherent noise that this type of circuitry

generates. For this reason, the RF front end of signal testers is generally isolated from downstream digital processing. For example, the two broadband filters, which are part of the RF front end of present invention (see 70 and 72, Fig. 5), tend to utilize surface wave acoustic (SAW) technology rather than digital techniques as described by Collison. In summary, Collison et al cannot be seen to represent relevant prior art for the present invention.

Claim 9 has been rejected based on the premise that a modified system of Emsley et al. contains all the limitations of this claim. However, as previously demonstrated, the suggested modification of Emsley et al's system cannot be considered as obvious for the reasons detailed in connection with Claims 1, 10 and 16. Therefore, it is respectfully submitted that neither Claim 9, nor Claims 15 and 18, are obvious over Emsley et al. Thus, Applicants respectfully submit that Claims 9, 15 and 18 are patentable.

The rejection of Claims 2 and 17 under 35 U.S.C. 103(a) as being unpatentable over Emsley et al in view of Liu et al (US Pat. No. 6,222,891) is respectfully traversed.

With the aforementioned amendments, Claim 1 is believed to be patentably distinguishable over Emsley et al, by the explicit inclusion of a user interface for permitting the user to select the desired digital standard, particularly, as it relates to filter bandwidth. Thus, Emsley et al do not disclose all limitations of Claim 1.

The patent to Liu et al has been alleged to disclose a similar system which is capable of demodulating signals that have been

transmitted according to a variety of protocols as defined by the ITU, which include Annex A, B, and C.

The text of Lui et al's 'Background of the Invention', Col. 1, lines 34-67 thru Col. 2, lines 1-8, states the following:

> "Given the implementation of multiple modulation techniques in the various adopted standards, there exists a need for a television receiver system capable of receiving and demodulating television signal information content that has been modulated and transmitted in accordance with a variety of modulation formats."

Thus, Lui et al identify a need for devising a television receiver suitable for a variety of modulation formats. However, there is no discussion of how such a receiver is to be constructed, so that it is not obvious that a combination of Emsley et al's and Liu et al's teachings would yield all the limitations of Claim 2.

Liu et al further state that:

> "The resulting digital data is error corrected with integrated trellis and Reid-Solomon decoders which support both the ATSC A/53 and ITU T J.83 Annex A/B/C coding formats."

While the ITU standards recited in Claim 2 are mentioned, it should be recognized that only the named decoding components support these standards, but not necessarily the entirely of Liu et al's system, as suggested in the Office Action.

Liu et al further state:

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"Specifically, the Annex A/C decoder circuitry implements four general functions, frame synchronization, convolutional deinterleaving, Reid-Solomon error correction and derandomization."

Liu et al. make no statement here regarding the bandpass filters appropriate to the standards, nor any means or provision of a user interface for permitting a user select the appropriate broadband filter. This is not completely surprising, in view of the fact that Liu et al's receiver operates on an input IF signal, which is presumably already filtered.

While Liu et al. do mention the application of a 6 MHz SAW filter centered on the tuner IF frequency for a low IF mode of operation (col. 5, lines 40-44), they do not disclose or suggest that filters corresponding to other standards, 8 MHz for instance, are also incorporated in their system, nor how such filters would be selected when changing from one standard to another.

It should be apparent from the above discussion that the limitations of Claim 1 and Claim 2 are not disclosed by any combination of Liu et al. and Emsley et al.

Applicants therefore respectfully submit that Claim 2, as well as corresponding Claim 17, are patentable.

The rejection of Claims 6, 11, and 19 under 35 U.S.C. 103(a) as being unpatentable (obvious) over Emsley et al. in view of Schmidt et al. (US Pat. No. 5,939,887) is respectfully traversed.

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Claim 6 has been amended so that it is dependent on amended Claim 1. Claim 1 has been amended, as described above, to include the provision of a user interface that is operative to permit a user to select the functions of the testing instrument. Hence, the limitations of Claim 6 limitations are not disclosed by Emsley et al nor any obvious modification of their disclosure.

The Schmidt et al patent is directed to the detection, spectral measurement and display of the ingress of interference into a cable transmission system. Consistent with these objects, the disclosure of Schmidt et al does not make reference to any digital signal standard, a plurality of which is recited in Claim 6. Neither is there any mention of ITU, modulation schemes or decoders.

The cited excerpt from Schmidt et al (col. 5, lines 45-67 thru col. 6, lines 1-3) is directed to the front panel controls, which, according to the flow chart (Schmidt et al, Fig. 3), are used by an operator (user) to set measurement parameters such as center frequency, frequency span, a start frequency and a stop frequency for a spectral frequency measurement window. While some of the controls, being generic in nature, may have some commonality with a user interface, they differ substantially in their functionality.

In Claim 6, the user interface is operative to allow the operator or user to select a particular digital standard for use in carrying out measurements on a digital signal distribution system. By definition, this implies that only certain prescribed center frequencies and bandwidths would be presented as candidates for the user to choose from.

In contrast, the testing method disclosed by Schmidt et al provides for selecting start and stop frequencies for a spectral measurement window in the general range from about 5MHz to about 800MHz (col. 4, lines 34-41). Thus, to perform measurements corresponding to a desired digital standard using this system, the operator or user would have to determine the actual frequencies and bandwidths of the transmission channels by some other means, before being able to input the appropriate values.

The system of Emsley et al possesses a similar deficiency in this regard, as it also does not provide any means for the operator or user to select a particular digital standard.

Therefore, it is submitted that it would not be obvious how these two systems could be combined or modified in such a way as to arrive at a testing instrument with the same functionality as claimed in Claim 6. Applicants respectfully submit that Claim 6 is patentable.

A discussion of the rejection of Claim 19 is believed to be moot, in view of the cancellation of Claim 19.

In view of the foregoing demonstration of the failure of the cited prior art to disclose or suggest the various combinations of features of the amended claims, favorable reconsideration of his application, and a Notice of Allowability of Claims 1-6, 8-10 and 12-18 are respectfully requested.

Should any minor informalities need to be addressed, the Examiner is respectfully requested to contact the undersigned

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attorney at the telephone number listed below.

Please charge any shortage in fees due in connection with the filing of this paper, including Extension of Time fees, to Deposit Account No. 50-1465 and please credit any excess fees to such deposit account.

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CERTIFICATE OF FACSIMILE TRANSMISSION

I HEREBY CERTIFY that the foregoing correspondence has been forwarded via facsimile number **571-273-8300** to MAIL STOP AMENDMENT, COMMISSIONER FOR PATENTS, this 17 day of March 2006.

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